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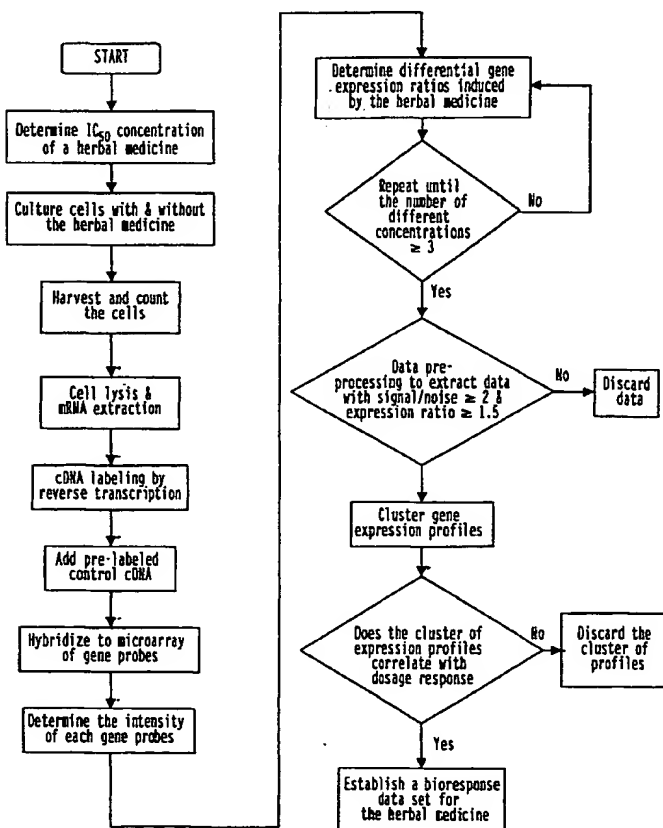
C. [US/US]; 975 Memorial Drive, Unit 301, Cambridge, MA 02138 (US). **PECK, Konan** [—/—]; 6F, No.8, Alley 30, Lane 78, Sec.2, Fu-Shing S. Road, Taipei, Taiwan 106 (TW). **LEE, Yun-Shien** [—/—]; 9F, 604 Nwan-Nwan Street, Keelung, Taiwan 200 (TW). **SHER, Yuh-Pyng** [—/—]; 7F, 114 Gungjan Road, Shijr Jen, Taiwan 221 (TW). **CHENG, Yung-Chi** [US/US]; 961 Baldwin Road, Woodbridge, CT 06525 (US).

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[Continued on next page]

(54) Title: **PHYTOMICS: A GENOMIC-BASED APPROACH TO HERBAL COMPOSITIONS**



(57) Abstract: The present invention provides the tools and methodologies necessary to guide the standardization of herbal compositions, to determine which specific components of an herbal composition are responsible for any particular biological activity, to predict the biological activities of a particular herbal composition, to determine the relatedness of herbal compositions, and for the development of improved herbal therapeutics. This invention provides the tools and methodologies for creating, maintaining, improving and utilizing Herbal BioResponse Arrays (HBR Arrays), wherein the HBR Arrays constitute data sets associated with particular herbal compositions. The HBR Arrays of the present invention contain gene expression profiles and may also include information on the plant-related parameters of the herbal constituents, marker information collected following the exposure of a biosystem to the herbal composition, and biological response information collected following the exposure of a biosystem to the herbal composition.

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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
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B. FIELDS SEARCHED

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

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WPI Data, PAJ, MEDLINE, CHEM ABS Data, BIOSIS, EMBASE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 98 06874 A (UNIV CALIFORNIA) 19 February 1998 (1998-02-19) the whole document ---	1-24
X	WO 97 13877 A (LYNX THERAPEUTICS INC ; MARTIN DAVID W (US)) 17 April 1997 (1997-04-17) the whole document ---	1-24
X	WO 97 27317 A (CHEE MARK ; LAI CHAOQIANG (US); LEE DANNY (US); AFFYMETRIX INC (US)) 31 July 1997 (1997-07-31) the whole document ---	1-24
X	WO 97 06277 A (UNIV CALIFORNIA) 20 February 1997 (1997-02-20) the whole document ---	1-24
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International Application No

PCT/US 01/07608

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GRAY N S: "EXPLOITING CHEMICAL LIBRARIES, STRUCTURE, AND GENOMICS IN THE SEARCH FOR KINASE INHIBITORS" SCIENCE, US, AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE,, vol. 281, no. 281, 24 July 1998 (1998-07-24), pages 533-538-538, XP002101911 ISSN: 0036-8075 the whole document ---	1-24
X	WO 99 58720 A (ACACIA BIOSCIENCES INC) 18 November 1999 (1999-11-18) the whole document ---	1-24
X	WO 97 22720 A (BEATTIE KENNETH LOREN) 26 June 1997 (1997-06-26) the whole document ---	1-24
X	WO 99 44062 A (SAUTER GUIDO ;US HEALTH (US); KONONEN JUHA (US); KALLIONIEMI OLLI) 2 September 1999 (1999-09-02) the whole document ---	1-24
Y	KOJIMA KEISUKE ET AL: "Long-term administration of "Sho-Saiko-To" increases cytochrome P-450 mRNA level in mouse liver." BIOLOGICAL & PHARMACEUTICAL BULLETIN, vol. 21, no. 4, April 1998 (1998-04), pages 426-428, XP002186043 ISSN: 0918-6158 the whole document ---	1-24
Y	ZENG YI ET AL: "Screening of Epstein-Barr virus early antigen expression inducers from Chinese medicinal herbs and plants." BIOMEDICAL AND ENVIRONMENTAL SCIENCES, vol. 7, no. 1, 1994, pages 50-55, XP002186044 ISSN: 0895-3988 the whole document ---	1-24
Y	SCHEMA M ET AL: "PARALLEL HUMAN GENOME ANALYSIS: MICROARRAY-BASED EXPRESSION MONITORING OF 1000 GENES" PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF USA, US, NATIONAL ACADEMY OF SCIENCE. WASHINGTON, vol. 93, 1 October 1996 (1996-10-01), pages 10614-10619, XP002070911 ISSN: 0027-8424 the whole document ---	1-24
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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 01/07608

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>HAY R J: "Cell line banking and authentication." DEVELOPMENTS IN BIOLOGICAL STANDARDIZATION, vol. 93, 1998, pages 15-19, XP001031093 Conference Centre of the Marcel-Merieux Foundation; Annecy, France; September 29-October 1, 1996, products prepared from mammalian cell culture. 1998 S. Karger AG; S. Karger AG P.O. Box, Allschwilerstrasse 10, CH-4009 Basel, Switzerland; New York, New York, USA ISBN: 3-8055-6732-4 the whole document</p> <p>---</p>	
A	<p>DATABASE ONLINE 'Online! www.dsmz.de/plantcell/planhist.htm, "History of the plant cell culture collection" XP002185949 abstract</p> <p>---</p>	
T	<p>DATABASE ONLINE 'Online! Cell line database, 20 October 2001 (2001-10-20)</p> <p>"http://biobenchelper.hypermart.net/cell/cell_line_database.htm" XP002185950 abstract</p> <p>---</p>	
P,L, X	<p>WO 00 24934 A (UNIV YALE ;CHENG YOUNG CHI (US); KUNG PATRICK C (US)) 4 May 2000 (2000-05-04) (This document may throw doubts on priority claims) the whole document</p> <p>-----</p>	1-24

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 01/07608

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9806874	A	19-02-1998	CA 2202152 A1	13-02-1998
			US 5777888 A	07-07-1998
			WO 9806874 A1	19-02-1998
			AU 720427 B2	01-06-2000
			AU 6771596 A	06-03-1998
			EP 0862649 A1	09-09-1998
			JP 11512603 T	02-11-1999
			US 6326140 B1	04-12-2001
WO 9713877	A	17-04-1997	AU 712929 B2	18-11-1999
			AU 4277896 A	06-05-1996
			AU 6102096 A	30-12-1996
			AU 7717596 A	30-04-1997
			CN 1193357 A	16-09-1998
			CZ 9700866 A3	17-09-1997
			CZ 9703926 A3	17-06-1998
			EP 0793718 A1	10-09-1997
			EP 0832287 A1	01-04-1998
			EP 0931165 A1	28-07-1999
			FI 971473 A	04-06-1997
			HU 9900910 A2	28-07-1999
			JP 11507528 T	06-07-1999
			JP 10507357 T	21-07-1998
			NO 971644 A	02-06-1997
			NO 975744 A	05-02-1998
			PL 324000 A1	27-04-1998
			US 6280935 B1	28-08-2001
			WO 9641011 A1	19-12-1996
			WO 9713877 A1	17-04-1997
			US 6235475 B1	22-05-2001
			AU 718357 B2	13-04-2000
WO 9727317	A	31-07-1997	AU 2253397 A	20-08-1997
			EP 0880598 A1	02-12-1998
			WO 9727317 A1	31-07-1997
WO 9706277	A	20-02-1997	US 5569588 A	29-10-1996
			AU 724474 B2	21-09-2000
			AU 6720996 A	05-03-1997
			CA 2202154 A1	20-02-1997
			EP 0791078 A1	27-08-1997
			JP 10507647 T	28-07-1998
			WO 9706277 A1	20-02-1997
WO 9958720	A	18-11-1999	AU 4075199 A	29-11-1999
			CN 1309722 T	22-08-2001
			EP 1076722 A1	21-02-2001
			WO 9958720 A1	18-11-1999
WO 9722720	A	26-06-1997	AU 1687597 A	14-07-1997
			WO 9722720 A1	26-06-1997
			US 6156502 A	05-12-2000
WO 9944062	A	02-09-1999	AU 2875799 A	15-09-1999
			AU 2973599 A	15-09-1999
			EP 1068528 A2	17-01-2001
			EP 1066517 A1	10-01-2001
			WO 9944062 A1	02-09-1999

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 01/07608

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9944062	A	WO 9944063 A2	02-09-1999
		EP 1131470 A1	12-09-2001
		WO 0024940 A1	04-05-2000
WO 0024934	A	AU 1224900 A	15-05-2000
	04-05-2000	EP 1124991 A1	22-08-2001
		WO 0024934 A1	04-05-2000